PATENT COOPERATION T. ATY

PCT

NOTIFICATION OF ELECTION

(PCT Rule 61.2)

To:

Assistant Commissioner for Patents United States Patent and Trademark Office Box PCT Washington, D.C.20231 ETATS-UNIS D'AMERIQUE

Date of mailing (day/month/year)
29 March 2000 (29.03.00)
in its capacity as elected Office

International application No. PCT/AU99/00691

International filing date (day/month/year) 26 August 1999 (26.08.99) Applicant's or agent's file reference 2208737/TDO

Priority date (day/month/year)
27 August 1998 (27.08.98)

Applicant

KOLA, Ismail et al

				mining Authori	,	
		25 Feb	ruary 2000	(25.02.00)		
in a noti	ce effecting later elec	ction filed with	the Internation	nal Bureau on:		
	•				•	,
				•		
The election	X was					
	was not					
	was not		ü	•		
made before the Rule 32.2(b).	was not ne expiration of 19 m	onths from the	priority date o	or, where Rule 3	2 applies, within the	time limit under
made before th Rule 32.2(b).		onths from the	e priority date o	or, where Rule 3	2 applies, within the	time limit under
made before th Rule 32.2(b).		onths from the	e priority date o	or, where Rule 3	2 applies, within the	time limit under
made before th Rule 32.2(b).		onths from the	e priority date o	or, where Rule 3	2 applies, within the	time limit under
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made before th Rule 32.2(b).		onths from the	e priority date o	or, where Rule 3	2 applies, within the	time limit under
made before th Rule 32.2(b).		onths from the	e priority date o	or, where Rule 3	2 applies, within the	time limit under

Authorized officer

·Telephone No.: (41-22) 338.83.38

Jean-Marc Vivet

Form PCT/IB/331 (July 1992)

Facsimile No.: (41-22) 740.14.35

The International Bureau of WIPO 34, chemin des Colombettes

1211 Geneva 20, Switzerland

3195733

WEONESDAY- 3 MAR 2000

From the INTERNATIONAL PRELIMINARY E	EXAMINING AUTHORI	ГҮ	DCT		
To: Agent :			PCT		
DAVIES COLLISON CAVE 1 Little Collins Street MELBOURNE VIC 3000		OF DEMANI PRELIMI (PCT Rule	IFICATION OF RECEIPT D BY COMPETENT INTERNATIONARY EXAMINING AUTHOR 59.3(e) and 61.1(b), first sentence	RITY æ	
		and Administrative Instructions, Section 601(a)) Date of mailing 7 MAR 2000 (day/month/year) (7/3/00)			
Applicant's or agent's file reference 2208737		ІМРС	RTANT NOTIFICATION		
International application No. PCT/AU99/00691	International filing date (da 26 AUG 1999 (26/		Priority date (day/month/year) 27 AUG 1998 (27/8/98)		
Applicant Monash Univeristy	(et al.)				
The applicant is hereby notified that date of receipt of the demand for interest.	 The applicant is hereby notified that this International Preliminary Examining Authority considers the following date as the date of receipt of the demand for international preliminary examination of the international application; 				
_	25 FEB 2000 (2	5/2/00/			
2. That date of receipt is:					
the actual date of re	eccipt of the demand by this	Authority (Rule 61.1(b)).		
the actual date of re	eceipt of the demand on behi	alf of this Authority (F	tule 59.3(e)).		
the date on which the PCT/fPEA/404), re	this Authority has, in response eccived the required correcti	se to the Invitation to toons.	correct defects in the demand (Form		
Attention: That date of receipt is AFTER the expiration of 19 months from the priority date. Consequently, the elections(s) made in the demand does (do) not have the effect of postponing the entry into the national phase until 30 months from the priority date (or later in some Offices) (Article 39(1)). Therefore, the acts for entry into the national phase must be performed within 20 months from the priority date (or later in some Offices) (Article 22). For details, see the PCT Applicant's Guide, Volume 11.					
(If applicable) This no	tification confirms the inform	nation given by teleph	one, facsimile transmission or in per	rson on:	
<u>-</u>					
4. Only where paragraph 3 applies, a col	py of this notification has been	en sent to the Internati	onal Bureau.		
					
Name and mailing address of the IPEA/Al	U	Authorized officer	MR SEAN MCLACHLAN		
AUSTRALIAN PATENT OFFICE PO BOX 200, WODEN ACT 2606, AU E-mail: pcc@ipaustralia.gov.au	ISTRALIA		02 6283 2357		
Coman, pengapansuana.gov.au					

Telephone No.

Facsimile No. 02 6285 3929



WORLD INTELLECTUAL PROPERTY ORGANIZATION International Bureau



INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification 6: C12N 15/12, C07K 14/435, 14/47, 14/475, A61K 39/395, 38/17

(11) International Publication Number: A1

WO 00/12695

(43) International Publication Date:

9 March 2000 (09.03.00)

(21) International Application Number:

PCT/AU99/00691

(22) International Filing Date:

26 August 1999 (26.08.99)

(30) Priority Data:

PP 5512 PP 6252

27 August 1998 (27.08.98)

AU 30 September 1998 (30.09.98) ΑŬ

(71) Applicant (for all designated States except US): MONASH UNIVERSITY [AU/AU]; Monash Medical Centre, Level 5, 246 Clayton Road, Clayton, VIC 3168 (AU).

(72) Inventors; and

(75) Inventors/Applicants (for US only): KOLA, Ismail [AU/AU]; 593 Orrong Road, Armadale, VIC 3143 (AU). ZHOU, Jiong [AU/AU]; 5 Valerie Court, Vermont South, VIC 3133 (AU).

(74) Agents: SLATTERY, John, M. et al.; Davies Collison Cave, 1 Little Collins Street, Melbourne, VIC 3000 (AU).

(81) Designated States: AE, AL, AM, AT, AU, AZ, BA, BB, BG. BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP. KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD. SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CJ, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

Published

With international search report.

(54) Title: NOVEL THERAPEUTIC MOLECULES AND USES THEREPOR

(57) Abstract

The present invention relates generally to novel molecules capable of, inter alia, controlling cellular functional activity such as proliferation, differentiation and/or transcriptional regulation and to genetic sequences encoding same. More particularly, the present invention relates to novel members of the ETS family of proteins, referred to herein as "ELF5", and to genetic sequences encoding same. The molecules of the present invention are useful, for example, in therapy, diagnosis, antibody generation and as a screening tool for agents capable of modulating transcriptional events during cellular functioning such as in tumorigenesis.

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NOTICE INFORMING THE APPLICANT OF THE COMMUNICATION OF THE INTERNATIONAL APPLICATION TO THE DESIGNATED OFFICES

(PCT Rule 47.1(c), first sentence)

From the INTERNATIONAL BUREAU

SLATTERY, John, M. **Davies Collison Cave** 1 Little Collins Street Melbourne, VIC 3000 **AUSTRALIE**

JESDAY 2 1 MAR 2000

Date of mailing (day/month/year) 09 March 2000 (09.03.00)

Applicant's or agent's file reference 2208737/TDO

International application No. PCT/AU99/00691

International filing date (day/month/year) 26 August 1999 (26.08.99)

Priority date (day/month/year)

IMPORTANT NOTICE

27 August 1998 (27.08.98)

Applicant

MONASH UNIVERSITY et al

Notice is hereby given that the International Bureau has communicated, as provided in Article 20, the international application to the following designated Offices on the date indicated above as the date of mailing of this Notice: AU, CN, EP, JP, KP, KR, US

In accordance with Rule 47.1(c), third sentence, those Offices will accept the present Notice as conclusive evidence that the communication of the international application has duly taken place on the date of mailing indicated above and no copy of the international application is required to be furnished by the applicant to the designated Office(s).

2. The following designated Offices have waived the requirement for such a communication at this time:

AE,AL,AM,AP,AT,AZ,BA,BB,BG,BR,BY,CA,CH,CR,CU,CZ,DE,DK,DM,EA,EE,ES,FI,GB,GD,GE,GH, GM,HR,HU,ID,IL,IN,IS,KE,KG,KZ,LC,LK,LR,LS,LT,LU,LV,MD,MG,MK,MN,MW,MX,NO,NZ,OA,PL, PT,RO,RU,SD,SE,SG,SI,SK,SL,TJ,TM,TR,TT,UA,UG,UZ,VN,YU,ZA,ZW
The communication will be made to those Offices only upon their request. Furthermore, those Offices do not require the

applicant to furnish a copy of the international application (Rule 49.1(a-bis)).

3. Enclosed with this Notice is a copy of the international application as published by the International Bureau on 09 March 2000 (09.03.00) under No. WO 00/12695

REMINDER REGARDING CHAPTER II (Article 31(2)(a) and Rule 54.2)

If the applicant wishes to postpone entry into the national phase until 30 months (or later in some Offices) from the priority date, a demand for international preliminary examination must be filed with the competent International Preliminary Examining Authority before the expiration of 19 months from the priority date.

It is the applicant's sole responsibility to monitor the 19-month time limit.

Note that only an applicant who is a national or resident of a PCT Contracting State which is bound by Chapter II has the right to file a demand for international preliminary examination.

REMINDER REGARDING ENTRY INTO THE NATIONAL PHASE (Article 22 or 39(1))

If the applicant wishes to proceed with the international application in the national phase, he must, within 20 months or 30 months, or later in some Offices, perform the acts referred to therein before each designated or elected Office.

For further important information on the time limits and acts to be performed for entering the national phase, see the Annex to Form PCT/IB/301 (Notification of Receipt of Record Copy) and Volume II of the PCT Applicant's Guide.

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland

Authorized officer

J. Zahra

Facsimile No. (41-22) 740.14.35

Telephone No. (41-22) 338.83.38

IPEA/

PCT

CHAPTER II

DEMAND

under Article 31 of the Patent Cooperation Treaty:

The undersigned requests that the international application specified below be the subject of international preliminary examination according to the Patent Cooperation Treaty and hereby elects all eligible States (except where otherwise indicated).

F	or International Prelimin	ary Examining Author	ity use only
Identification of IPEA		Date of receipt of	DEMAND
Box No. 1 IDENTIFICATION OF	THE INTERNATIONA	LAPPLICATION	Applicant's or agent's file reference 22087 37/TDO
International application No PCT/AU99/00691	International filing day (26.08.1999)	c (day/month/year)	(Earliest) Priority date (day/month/year) (27.08.1998)
Title of invention	26 August, 1	.999	27 August, 1998
NOVEL THERAPEUTIC MOLECUI	LES AND USES THE	REFOR	
Box No. 11 APPLICANT(S)			
Name and address: (Familyname followed by) The addressmust include p MONASH UNIVERSITY	grænname; for a legalentity. J rostal code and name of countr	full official designation. y.)	Telephone No.:
Monash Medical Centre Level 5 246 Clayton Road			Facsimile No.:
Clayton 3168 Victoria, Australia			Teleprinter No.:
State (that is, country) of nationality:		State (that is, country	y) ofresidence;
AUSTRALIA			AUSTRALIA
593 Orrong Road Armadale 3143 Victoria Australia	greenwore, jora legalemily,j	unojrcialdesignation, The	addressmustincludepostal code and name of country.)
State (that is, country) of nationality: AUSTRALIA		State (that is, country	y) of residence: AUSTRALIA
Name and address: (Family name followed by § ZHOU, Jiong 5 Valerie Court Vermont South 3133 Victoria Australia	givenname; for a legalentity f	ull official designation. Th	e addressmust include postal code and name of country. J
State (that is, country) of nationality; Australia		State (that is, countr	ייִיסfresidence: Australia
Further applicants are indicated on	a continuation sheet.		

		International application No.	
	Sheet No. 2.	PCT/AU99/00691	
BOX NO. III AGENT OR COMMON F	REPRESENTATIVE: OR ADDRESS FOR CO		
The following person is X agent	common representative		
and XX has been appointed earlier and re	epresents the applicant(s) also for international pr	reliminary examination.	
<u></u>	icr appointment of (an) agent(s)/common represe		
	for the procedure before the International Prelim		
Name and address: (Family name followed by The address must include	given name: for a legal entity, full official designation. postal code and name of country.)	Telephone No.:	
SLATTERY, John M CAINE, Michael J	DAVIES COLLISON CAVE	+61 3 9254 2777	
HUNTSMAN, Peter H	1 Little Collins Street Melbourne 3000	Facsimile No.:	
	Victoria Australia	+61 3 9254 2770	
	Australia	Teleprinter No.:	
Address for correspondence: M space above is used instead to ind	ark this check-box where no agent or common re icate a special address to which correspondence s	presentative is/has been appointed and the should be sent.	
Box No. IV BASIS FOR INTERNATION	NAL PRELIMINARY EXAMINATION		
Statement concerning amendments;*			
1. The applicant wishes the international pr	climinary examination to start on the basis of:		
the international application as original	ginally filed		
the description as originally fil	led .		
as amended un	der Article 34		
the claims as originally fil			
	der Article 19 (together with any accompanying	statement)	
as amended und	der Article 34		
the drawings as originally fil		•	
as amended uno	der Anicle 34		
	ent to the claims under Article 19 to be considere		
3. The applicant wishes the start of the international preliminary examination to be postponed until the expiration of 20 months from the priority date unless the International Preliminary Examining Authority receives a copy of any amendments made under Article 19 or a notice from the applicant that he does not wish to make such amendments (Rule 69.1(d)). (This checkbox may be marked only where the time limit under Article 19 has not yet expired.)			
Where no check-box is marked, interna as originally filed or, where a copy of ame under Article 34 are received by the Intern or the international preliminary examinat	ational preliminary examination will start on the indments to the claims under Article 19 and/or am lational Pteliminary Examining Authority before ion report, as so amended.	ne basis of the international application cendments of the international application it has begun to draw up a written opinion	
Language for the purposes of internationa	d preliminary examination: English		
XI which is the language in which i	he international application was filed.		
which is the language of a transl	ation furnished for the purposes of internation	al Search.	
which is the language of publica	tion of the international application		

the PCT)

Box No. V ELECTION OF STATES

The applicant hereby elects all eligible States (that is, all States which have been designated and which are bound by Chapter II of excluding the following States which the applicant wishes not to elect:

which is the language of the translation (to be) furnished for the purposes of international preliminary examination.

Sheet No. . 3.

International application No.

PCT/AU99/00691

Box No. VI CHECK LIST				
The demand is accompanied by the following e Box No. IV, for the purposes of international p			For Interna Examining	itional Preliminary Authority use only
DOX 100 11 (101 dis parposes of minamational)	, , , , , , , , , , , , , , , , , , , ,		received	not received
l. translation of international application	:	sheets		
2. amendments under Article 34	:	sheets		
 copy (or, where required, translation) of amendments under Article 19 	:	sheets		
 copy (or, where required, translation) of statement under Article 19 	:	sheets		
5. letter ·	:	sheets		
6. Other (specify)	:	sheets		
The demand is also accompanied by the item(s) ma	arked below:			
1 fee calculation sheet			explaining lack of sign	į
2. separate signed power of attorney			and or amino acid sequenced able form	uence listing in
copy of general power of attorney; reference number, if any:		6. other (spec	ifs):	
Box No. VII SIGNATURE OF APPLICANT,	GENT OR	COMMON REPRESE	NTATIVE	
Nexttoeach signature indicate the name of the person signing and the capacity in which the person signs (if such capacity is not obvious from reading the demand). SLATTERY, John M for and on behalf of the applicant(s).				
2				
For Internatio	nal Prelimina	ry Examining Authority	use only	
1. Date of actual receipt of DEMAND:				
Adjusted date of receipt of demand due to CORRECTIONS under Rule 60.1(b):				
3. The date of receipt of the demand is A from the priority date and item 4 or 5,	FTER the exp below, does	iration of 19 months not apply.	The application informed according to the contract of the cont	
4. The date of receipt of the demand is Rule 80.5.	WITHIN the	period of 19 months fr	om the priority date a	s extended by virtue of
5. Although the date of receipt of the de is EXCUSED pursuant to Rule 82.	mand is after	the expiration of 19 mo	nths from the priority (date, the delay in arrival
	For Internation	onal Bureau use only _		
Demand received from IPEA on:		23.322 200 0000 2		

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44) Applicant's or agent's file reference FOR FURTHER see Notification of Transmittal of International Search Report 2208737/TAO (Form PCT/ISA/220) as well as, where applicable, item 5 below. ACTION International application No. International filing date (day/month/year) (Earliest) Priority Date (day/month/year) PCT/AU 99/00691 26 August 1999 27 August 1998 Applicant MONASH UNIVERISTY Ι. 2. KOLA, Ismail 3. ZHOU, Jiong This international search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau. This international search report consists of a total of 5 sheets. It is also accompanied by a copy of each prior art document cited in this report. 1. Basis of the report With regard to the language, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item. the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rulc 23.1(b)). With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international application, the international search was carried out on the basis of the sequence listing: contained in the international application in written form. filed together with the international application in computer readable form. furnished subsequently to this Authority in written form. furnished subsequently to this Authority in computer readable form. the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished the statement that the information recorded in computer readable form is identical to the written sequence listing has been 2. Certain claims were found unscarchable (See Box I). 3. Unity of invention is lacking (See Box II). 4. With regard to the title, the text is approved as submitted by the applicant. the text has been established by this Authority to read as follows: With regard to the abstract, the text is approved as submitted by the applicant the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report. submit comments to this Authority. The figure of the drawings to be published with the abstract is Figure No. as suggested by the applicant. None of the figures because the applicant failed to suggest a figure because this figure better characterizes the invention



PCT/AU 99/00691

Box 1 Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)
This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:
1. Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. X Claims Nos.: 26-28, 31-36, 39-50, 55-58 have been partially searched
because they relate to parts of the international application that do not comply with the prescribed requirements
to such an extent that no meaningful international search can be carried out, specifically.
Due to the broad scope of the claims, for economic reasons the International Searching Authority only partially searched the said claims.
sourched the said cladits.
3. Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule
6.4(a)
Box II Observations where unity of invention is lacking (Continuation of item 3 of first sheet)
This International Searching Authority found multiple inventions in this international application, as follows:
1. As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims
As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:
Remark on Protest The additional scarch fees were accompanied by the applicant's protest,
No protest accompanied the payment of additional search fees.
Protest accompanies the payment of auditional search fees.

PCT/AU 99/00691 CLASSIFICATION OF SUBJECT MATTER Int Cl6: C12N 15/12; C07K 14/435, 14/47, 14/475; A61K 39/395, 38/17 According to International Patent Classification (IPC) or to both national classification and IPC FIELDS SEARCHED Minimum documentation searched (classification system followed by classification symbols) DERWENT DATABASES - WPAT, CHEMICAL ABSTRACTS - DGENE Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched USPM; MEDLINE; SWISS-PROT, PIR, EMBL Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) WPAT, USPM - Keywords: (transcript: (5N) factor#) and (ETS#### or ELF### or E74###) and (C12N-015/12/IC or C07K/IC or A61K/IC); MEDLINE - Keywords: ETS and ELF, transcription factors [MESH TERM] and ETS and ELF; DGENE, SWISS-PROT, PIR, EMBL - Sequence search: Scq. Id. Nos. 2, 4, 7 C. DOCUMENTS CONSIDERED TO BE RELEVANT Category* Citation of document, with indication, where appropriate, of the relevant passages Relevant to claim No. Oncogene, 17, 1998, "A novel transcription factor, ELF5, belongs to the ELF PXsubfamily of ETS genes and maps to human chromosome 11 p13-15, a 1-58 region subject to LOH and rearrangement in human carcinoma cell lines", J. Zhou et. al., pp. 2719-2732 (see entire document) US 5 721 113 (LIBERMANN et. al.) publ. 24 February 1998 (see Scq. Id. X 1, 2, 4, 6, 8, 10, 12, 15, 18, 21 Nucl. Acids Res., 25(21), 1997, "The expression of a novel, cpithelium-X 1, 2, 4, 6, 8, 10, 12, specific ets transcription factor is restricted to the most differentiated layers 15, 18, 21 of the epidermis", J. M. Andreoli et. al., pp. 4287-4295 (see Fig. 2) Further documents are listed in the Sec patent family annex continuation of Box C. Special categories of cited documents: "T" later document published after the international filing date or "A" Document defining the general state of the art which is priority date and not in conflict with the application but cited to not considered to be of particular relevance understand the principle or theory underlying the invention "E" carlier application or patent but published on or after the "X" document of particular relevance; the claimed invention cannot international filing date be considered novel or cannot be considered to involve an "(," document which may throw doubts on priority claim(s) inventive step when the document is taken alone or which is cited to establish the publication date of document of particular relevance; the claimed invention cannot another citation or other special reason (as specified) be considered to involve an inventive step when the document is document referring to an oral disclosure, use, exhibition combined with one or more other such documents, such or other means combination being obvious to a person skilled in the art document published prior to the international filing date document member of the same patent family but later than the priority date claimed Date of the actual completion of the international search Date of mailing of the international search report 22 September 1999 -7 DCT 1999 Name and mailing address of the ISA/AII Authorized officer AUSTRALIAN PATENT OFFICE PO BOX 200 WODEN ACT 2606

KAREN TAN

Tclephone No.: (02) 6283 2091

AUSTRALIA

Facsimile No.: (02) 6285 3929



PCT/AU 99/00691

Į	C (Continuat	ion). DOCUMENTS CONSIDERED TO BE RELEVANT	77/00091
	Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
,	3 Х	Biochem. Biophys. Res. Commun., 246, 1998, "Molecular cloning and expression of Ehf, a new member of the ets transcription factor/oncoprotein gene family", M.A. Bochert et. al., pp 176-181 (see Fig. 1)	1, 2, 4, 6, 8, 10, 12, 15, 18, 21
	5 X	AU, A, 53663/98 (THE REGENTS OF THE UNIVERSITY OF CALIFORNIA) opi. 22 June 1998, epd. 27 November 1996 (see Fig. 4)	1-5, 15
.	ė X	EP 839 908 A2 (SMITHKLINE BEECHAM CORPORATION) publ. 6 May 1988, epd. 31 October 1996 (see Fig 1b)	1, 10-13, 21, 22
	- x	Devlp. Biol., 151, 1992, "Isolation and characterisation of five Drosophila genes that encode an ets-related DNA binding domain", T. Chen et. al., pp. 176-191 (see Fig. 2)	1, 2, 4, 6, 8, 10, 12, 15, 18, 21
	. x	WO 95/14773 (NORDHEIM et. al.) publ. 1 June 1995, epd. 25 November 1993 (see abstract and examples)	26-28, 31-36, 39-50
	X	The New Biologist, 4(5), May 1992, "Analysis of the DNA binding and transcription activation properties of the Ets 1 oncoprotein", A. Gegonne et al., pp. 512-519 (see entire document)	26-28, 31-36, 39-50
	x	Hybridoma, 11(3), 1992, "Characterisation and uses of monoclonal antibody derived against DNA binding domain of the ETS family of gencs", N.K. Bhat and T.S. Papas, pp. 277-294 (see entire document)	26-28, 31-36, 39-50
	Α .	Cell Growth and Differentiation, Vol. 3, May 1992, "The ets gene family", A. Seth et. al., pp. 327-334 (see entire document)	1-58
	- А	Eur. J. Biochem., 211, 1993, "Review: the Ets family of transcription factors", B. Wasylyk et. al., pp. 7-18 (see entire document)	1-58
	P,X	GenPept Database-Accession No: AAD22960, "Ets Transcription factor ESE-2a", P. Oettgen et. al.	1-58

Information on patent family members

International application No. PCT/AU 99/00691

This Annex lists the known "A" publication level patent family members relating to the patent documents cited in the above-mentioned international search report. The Australian Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

Patent Document Cited in Search Report				Paten	t Family Member	
AU	53663/98	WO	9823782		_	
EP	839908	JР	10234385	US	5789200	
WO	9514773	DE	4340116			

END OF ANNEX

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

	· · · · · · · · · · · · · · · · · · ·				
Applicant's or agent's file reference 2208737	FOR FURTHER ACTION		ransmittal of International Preliminary (Form PCT/IPEA/416).		
International application No.	International filing dat	te (day/month/year)	Priority Date (day/month/year)		
PCT/AU99/00691	26 August 1999		27 August 1998		
International Patent Classification (IPC) or national classification and IPC					
Int. Cl. 7 C12N 15/12; C07K 14/4:	35, 14/4 7, 14/475; A6	1K 39/395, 38/17			
Applicant MONASH UNIVERISTY	et al				
This international preliminar Authority and is transmitted to	y examination report has to the applicant according	s been prepared by this ag to Article 36.	International Preliminary Examining		
2. This REPORT consists of a to					
been amended and are t	This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).				
These annexes consist of a to	tal of sheet(s).				
3. This report contains indications rela	ting to the following ite:	ms:	·		
I X Basis of the repo	ort				
II Priority					
III X Non-establishme	ent of opinion with regar	rd to novelty, inventive	step and industrial applicability		
IV Lack of unity of	invention		,		
V X Reasoned statem citations and ex					
VI Certain docume	nts cited				
VII Certain defects	in the international appl	ication			
VIII Ccrtain observa	tions on the internationa	al application			
Date of submission of the demand 25 February 2000		Date of completion of 28 September 2000	the report		
Name and mailing address of the IPENAU	J	Authorized Officer			
AUSTRALIAN PATENT OFFICE PO BOX 200, WODEN ACT 2606, AUS E-mail address: pct@ipaustralia.gov.au		JAMIE TURNER			
Facsimile No. (02) 6285 3929		Telephone No. (02) 62	283 2071		

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I.	Bas	is of the report
1.		gard to the elements of the international application:*
	X th	e international application as originally filed.
	[] th	e description, pages , as originally filed,
		pages , filed with the demand,
		pages, received on with the letter of
	tl 🔲	e claims, pages, as originally filed,
		pages, as amended (together with any statement) under Article 19,
		pages, filed with the demand,
		pages, received on with the letter of
	11	e drawings, pages, as originally filed,
		pages , filed with the demand,
		pages, received on with the letter of
	"	e sequence listing part of the description:
		pages , as originally filed
		pages, filed with the demand pages, received on with the letter of
		pages, received on with the letter of gard to the language, all the elements marked above were available or furnished to this Authority in the language in
2.	which th	e international application was filed, unless otherwise indicated under this item.
	These el	ements were available or furnished to this Authority in the following language which is:
	t1	le language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
	tl tl	e language of publication of the international application (under Rule 48.3(b)).
		le language of the translation furnished for the purposes of international preliminary examination (under Rules 55.2 and/or 55.3).
3.		gard to any nucleotide and/or amino acid sequence disclosed in the international application, was on the basis of ence listing:
		ontained in the international application in written form.
	X	led together with the international application in computer readable form.
	☐ f	nrnished subsequently to this Authority in written form.
	☐ f	urnished subsequently to this Authority in computer readable form.
	1 i	the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
		the statement that the information recorded in computer readable form is identical to the written sequence listing has een furnished
4.	П ₁	he amendments have resulted in the cancellation of:
		the description, pages
		the claims, Nos.
		the drawings, sheets/fig.
5.	[] n	This report has been established as if (some of) the amendments had not been made, since they have been considered
	t	go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).**
*	Replace	ment sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this socially filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17).
		company sheet containing such amendments must be referred to under item 1 and annexed to this report

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111.	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
1.	The questions whether the claimed invention appears to be novel, to involve an inventive step (to be nonobvious), or to be industrially applicable have not been examined in respect of:
	the entire international application,
	X claims Nos: 26-28, 31-36, 39-50, 55-58
	because:
	the said international application, or the said claims Nos. require an international preliminary examination (specify):
	the description, claims or drawings (indicate particular elements below) or said claims Nos. are so unclear that no meaningful opinion could be formed (specify):
	the claims, or said claims Nos. are so inadequately supported by the description that no meaningful opinion could be formed.
	x no international search report has been established for said claim Nos. 26-28, 31-36, 39-50, 55-58 when directed to the ELF5 protein not comprising an Ets domain.
2.	A meaningful international preliminary examination cannot be carried out due to the failure of the nucleotide and/or amino acid sequence listing to comply with the standard provided for in Annex C of the Administrative Instructions:
	the written form has not been furnished or does not comply with the standard.
	the computer readable form has not been furnished or does not comply with the standard.

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1.	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement				
	Statement				
	Novelty (N)	Claims 7-9, 16, 17, 19, 20, 23-25, 29, 30, 37, 38, 55-58	YES		
	1.0.0.9 (1.7	Claims 1-6, 10-15, 18, 21, 22, 26-28*, 31-36*, 39-50*, 51-54	NO		
	Inventive step (IS)	Claims 7-9, 16, 17, 19, 20, 23-25, 29, 30, 37, 38, 55-58*	YES		
	mventive step (10)	Claims 1-6, 10-15, 18, 21, 22, 26-28*, 31-36*, 39-50*, 51-54	NO		
	Industrial applicability (IA)	Claims 1-58	YES		
	muusutat appiicabiitty (1995)	Claims	NO		

2. Citations and explanations (Rule 70.7)

* - Note that claims 26-28, 31-36, 39-50 and 55-58 were not fully searched by the International Searching Authority. Consequently, this international preliminary examination report is established only to the extent that the invention defined by the claims is directed to the ELF5 protein comprising an Ets domain. ELF5 proteins not comprising an Ets domain have not formed any part of the basis of this report.

The abbreviations D1-D13 refer to the documents in the order as cited in the international search report.

NOVELTY (N) and INVENTIVE STEP (IS):

Documents D1 and D13 were published after the priority date but before the filing date of this international application. Unless the priority is challenged, these documents cannot form part of the prior art base under Rule 33 of the PCT.

Document D2 discloses the sequences id Nos. 3 and 4, which have over 45 % homology to the sequence id Nos. 2, 4 and 7. Consequently, the invention as defined in claims 1, 2, 4, 6, 10, 12, 14, 15, 18 and 21 is not novel and lacks an inventive step.

Document D3 discloses the sequences depicted in figure 2, which have over 45 % homology to the sequence id Nos. 3 and 4. Consequently, the invention as defined in claims 1, 2, 4, 6, 10, 12, 14, 15, 18 and 21 is not novel and lacks an inventive step.

Document D4 discloses the sequences depicted in figure 1, which have over 45 % homology to the sequence id Nos. 2, 4 and 7. Consequently, the invention as defined in claims 1, 2, 4, 6, 10, 12, 14, 15, 18 and 21 is not novel and lacks an inventive step.

Document D5 discloses the sequences depicted in figure 4 which have over 45 % homology to the sequence id Nos. 1, 2, 4 and 7. Consequently, the invention as defined in claims 1-5, 14 and 15 is not novel and lacks an inventive step.

Document D6 discloses the sequence id Nos. 1 and 2 which have over 45 % homology to the sequence id Nos. 4-7. Consequently, the invention as defined in claims 1, 10-14, 21 and 22 is not novel and lacks an inventive step

Document D7 discloses the sequences depicted in figure 2 which have over 45 % homology to the sequence id Nos. 2, 4 and 7. Consequently, the invention as defined in claims 1, 2, 4, 6, 10, 12, 14, 15, 18 and 21 is not novel and lacks an inventive step.

-continued in supplemental box-

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Supplemental Box

(To be used when the space in any of the preceding boxes is not sufficient)

Continuation of Box V

Document D8 discloses proteins (and the DNA which encodes the protein) with the Ets domain and said protein binding to an Ets binding site; the protein can be used for inhibition of transcription of animal genes regulated by the Ets binding sites, eg treatment of cancer etc. As such the disclosures deprive claims 1, 14, 26-28, 31-36 and 39-50 of novelty and inventive step.

Document D9 discloses an Ets1 protein, which has the DNA binding and transcriptional activation of the Ets family. As such D9 deprives claims 1 and 14 of novelty and inventive step.

Document D10 discloses antibodies to DNA binding domain of the Ets proteins. There is no specific disclosure of any Ets protein or gene. However the monoclonal antibodies are antagonistic to Ets proteins and, as such, they can be used to modulate the ELF5 activity in a mammal. In the light of such disclosures the invention as defined in claims 26-28, 31-36 and 39-54 is not novel and lacks an inventive step.

Document D11 discloses the Ets domains of the Ets family of proteins and its use as transcriptional factors. However there is no specific disclosure relating to any use of the transcriptional role. In the light of such disclosure the invention as defined in claims 1 and 14 is not novel and lacks an inventive step.

Document D12 discloses the family of Ets proteins and their role in cellular proliferation. However the latter disclosure is primarily on the cellular level and would be insufficient to support a medical treatment based on the proteins. In the light of such disclosures the invention as defined in claim 1 and 14 is not novel and lacks an inventive step.

INDUSTRIAL APPLICABILITY (IA):

The invention as defined in claims 1-58 appears to be useful in regulation of cellular proliferation and leading to therapeutic and diagnostic treatment and, as such, the invention so defined would have industrial applicability.

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Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

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EE	Estonia	LR	Liberia	SG	Singapore		

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CLASSIFICATION OF SUBJECT MATTER Int Cl6: C12N 15/12; C07K 14/435, 14/47, 14/475; A61K 39/395, 38/17 According to International Patent Classification (IPC) or to both national classification and IPC FIELDS SEARCHED Minimum documentation searched (classification system followed by classification symbols) DERWENT DATABASES - WPAT, CHEMICAL ABSTRACTS - DGENE Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched USPM; MEDLINE; SWISS-PROT, PIR, EMBL Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) WPAT, USPM - Keywords: (transcript:(5N) factor#) and (ETS#### or ELF### or E74###) and (C12N-015/12/IC or C07K/IC or A61K/IC); MEDLINE - Keywords: ETS and ELF, transcription factors [MESH TERM] and ETS and ELF; DGENE, SWISS-PROT, PIR, EMBL - Sequence search: Seq. Id. Nos: 2, 4, 7 DOCUMENTS CONSIDERED TO BE RELEVANT Relevant to claim No. Category* Citation of document, with indication, where appropriate, of the relevant passages Oncogene, 17, 1998, "A novel transcription factor, ELF5, belongs to the ELF P.X subfamily of ETS genes and maps to human chromosome 11 p13-15, a 1-58 region subject to LOH and rearrangement in human carcinoma cell lines", J. Zhou et. al., pp. 2719-2732 (see entire document) \mathbf{X} US 5 721 113 (LIBERMANN et. al.) publ. 24 February 1998 (see Seq. Id. 1, 2, 4, 6, 8, 10, 12, 15, 18, 21 No: 4) 1, 2, 4, 6, 8, 10, 12, X Nucl. Acids Res., 25(21), 1997, "The expression of a novel, epithelium-15, 18, 21 specific ets transcription factor is restricted to the most differentiated layers of the epidermis", J. M. Andreoli et. al., pp. 4287-4295 (see Fig. 2) Further documents are listed in the See patent family annex continuation of Box C Special categories of cited documents: later document published after the international filing date or "T" priority date and not in conflict with the application but cited to "A" Document defining the general state of the art which is understand the principle or theory underlying the invention not considered to be of particular relevance "X" document of particular relevance; the claimed invention cannot "E" earlier application or patent but published on or after the be considered novel or cannot be considered to involve an international filing date inventive step when the document is taken alone "L" document which may throw doubts on priority claim(s) document of particular relevance; the claimed invention cannot or which is cited to establish the publication date of be considered to involve an inventive step when the document is another citation or other special reason (as specified) "O" combined with one or more other such documents, such document referring to an oral disclosure, use, exhibition combination being obvious to a person skilled in the art or other means document member of the same patent family document published prior to the international filing date but later than the priority date claimed Date of mailing of the international search report Date of the actual completion of the international search -7 DCT 1999 22 September 1999 Name and mailing address of the ISA/AU Authorized officer **AUSTRALIAN PATENT OFFICE PO BOX 200** WODEN ACT 2606 KAREN TAN AUSTRALIA

Telephone No.: (02) 6283 2091

Facsimile No.: (02) 6285 3929

International application No.
PCT/AU 99/00691

C (Continua	tion). DOCUMENTS CONSIDERED TO BE RELEVANT	
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
х	Biochem. Biophys. Res. Commun., 246, 1998, "Molecular cloning and expression of Ehf, a new member of the ets transcription factor/oncoprotein gene family", M.A. Bochert et. al., pp 176-181 (see Fig. 1)	1, 2, 4, 6, 8, 10, 12, 15, 18, 21
x	AU, A, 53663/98 (THE REGENTS OF THE UNIVERSITY OF CALIFORNIA) opi. 22 June 1998, epd. 27 November 1996 (see Fig. 4)	1-5, 15
x	EP 839 908 A2 (SMITHKLINE BEECHAM CORPORATION) publ. 6 May 1988, epd. 31 October 1996 (see Fig 1b)	1, 10-13, 21, 22
x	Devlp. Biol., 151, 1992, "Isolation and characterisation of five Drosophila genes that encode an ets-related DNA binding domain", T. Chen et. al., pp. 176-191 (see Fig. 2)	1, 2, 4, 6, 8, 10, 12, 15, 18, 21
x	WO 95/14773 (NORDHEIM et. al.) publ. 1 June 1995, epd. 25 November 1993 (see abstract and examples)	26-28, 31-36, 39-50
X	The New Biologist, 4(5), May 1992, "Analysis of the DNA binding and transcription activation properties of the Ets 1 oncoprotein", A. Gegonne et. al., pp. 512-519 (see entire document)	26-28, 31-36, 39-50
x	Hybridoma, 11(3), 1992, "Characterisation and uses of monoclonal antibody derived against DNA binding domain of the ETS family of genes", N.K. Bhat and T.S. Papas, pp. 277-294 (see entire document)	26-28, 31-36, 39-50
A	Cell Growth and Differentiation, Vol. 3, May 1992, "The ets gene family", A. Seth et. al., pp. 327-334 (see entire document)	1-58
A	Eur. J. Biochem., 211, 1993, "Review: the Ets family of transcription factors", B. Wasylyk et. al., pp. 7-18 (see entire document)	1-58
P,X	GenPept Database-Accession No: AAD22960, "Ets Transcription factor ESE-2a", P. Oettgen et. al.	1-58

International Application No.

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Box 1 Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)
This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:
1. Claims Nos.: because they relate to subject matter not required to be searched by this Authority, namely:
Claims Nos.: because they relate to subject matter not required to be searched by this Authority, namely: Claims Nos.: 26-28, 31-36, 39-50, 55-58 have been partially searched because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically: e broad scope of the claims, for economic reasons the International Searching Authority only partially the said claims. Claims Nos.: because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a) Observations where unity of invention is lacking (Continuation of Item 3 of first sheet) national Searching Authority found multiple inventions in this international application, as follows: As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee. As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.: No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:
Due to the broad scope of the claims, for economic reasons the International Searching Authority only partially searched the said claims.
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule
Box II Observations where unity of invention is lacking (Continuation of item 3 of first sheet)
This International Searching Authority found multiple inventions in this international application, as follows:
Remark on Protest The additional search fees were accompanied by the applicant's protest. No protest accompanied the payment of additional search fees.

Information on patent family members

International application N . PCT/AU 99/00691

END OF ANNEX

This Annex lists the known "A" publication level patent family members relating to the patent documents cited in the above-mentioned international search report. The Australian Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

Patent Do	cument Cited in Search Report	1	Patent Family Member					
AU	53663/98	WO	9823782					
EP	839908	JР	10234385	US	5789200			
WO	9514773	DE	4340116					
				•				
						·		